

UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY

DIVISION OF SOLID AND HAZARDOUS WASTE

UTAH DIVISION OF SOLID & HAZARDOUS WASTE

APPLICATION FOR A PERMIT TO OPERATE A CLASS III LANDFILL

The applicant shall submit, in duplicate, an original permit application, a general report, and a technical report to:

Dennis R. Downs, Director Division of Solid and Hazardous Waste Utah Department of Environmental Quality PO Box 144880 Salt Lake City, UT 84114-4880

PART I - GENERAL INFORMATION

1.	Name of Facility <u>Intermountain Generating Facility</u>
2.	Site Location 11 1/2 miles North of Delta, Utah
3.	Facility Owner Intermountain Power Agency
4.	Facility Operator <u>Intermountain Power Service Corporation</u>
5.	Contact Person Dennis K. Killian
	Address 850 West Brush Wellman Road
	Delta, Utah 84624-9522
	Telephone (435) 864-4414
6.	Type of Application:
	□ Class IIIa Landfill 🔀 Class IIIb Landfill
	☐ Initial Application ☐ Permit Renewal
7.	Property Ownership

▼ Presently owned by applicant
☐ To be purchased by applicant
☐ To be leased by applicant
Property owner (if different from applicant)
Name
Address
Telephone
8. Certification of submitted information.
George W. Cross , President & Chief Operations Officer
(Name of Official) (Title)
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Signature: Date Date
SUBSCRIBED AND SWORN to before This 27 day of July
My commission expires on the
MOTAM PUBLIC • STATE of UTAH 850 W. BRUSH WELLMAN RD. DELTA, UT 84824 COMM. EXP. 03-16-2009

4th REVISION TO THE INTERMOUNTAIN POWER PLANT

DESIGN CRITERIA AND OPERATION PLAN

FOR

IPP INDUSTRIAL SANITARY LANDFILL

Prepared by

Ron Westlund

Original plan prepared by Los Angeles Department of Water & Power (LADWP)(1982)

1st Revision prepared by Ron Westlund (1991)

2nd Revision Prepared by Ron Westlund (1996)

3rd Revision Prepared by Ron Westlund (2001)

Intermountain Power Service Corporation

July 2006

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1.0 **SUMMARY**

This report is written to revise the licensing document entitled "IPP Sanitary Landfill Design Criteria and Operation Report" prepared by the Los Angeles Department of Water and Power in April, 1982 and revised in the March, 1991, 1996 and February 2001 Permit Application.

There are two landfills at the Intermountain Power Project (IPP), the Sanitary Landfill and the Combustion By-Products Landfill. This report pertains only to the Sanitary Landfill. The permit renewal for the combustion by-products landfill is in a separate report.

The IPP Sanitary Landfill (hereinafter referred to as "landfill") is an industrial class IIIb landfill which is used for landfilling appropriate nonhazardous wastes generated at the IPP. This landfill only accepts nonhazardous wastes which are generated onsite, it does not accept any wastes which have been generated offsite. Intermountain Power Service Corporation (IPSC) obtained landfill permits in 1991 and 1996 (Permit #9602) and 2001 (Permit 9103R2). The information which follows in this permit renewal report largely follows the same format that was submitted the last three times IPSC applied for a permit renewal for its landfill in 1991, 1996, and 2001.

2.0 PURPOSE AND SCOPE OF REPORT

2.1 Purpose of Report

The purpose of this report is to document the types and quantities of the anticipated solid waste at the IPP Site for the licensing of the landfill. The report also provides a plan for the operation of the landfill.

2.2 Scope of Report

The scope of this report is limited to the landfill licensing, design criteria, and operation plan. The landfill wastes are also identified in their different categories.

A hydrogeologic study of the landfill area was conducted for the project and reported by Ertec Western, Incorporated, in June 1981. Soil boring information from the Ertec Report is included in Appendix 1.

3.0 PROJECT INFORMATION

The IPP (Figure 1) is a 1,900 megawatt coal-fired power plant constructed near the town of Lynndyl, in Millard County, Utah. The Intermountain Power Agency (IPA) owns approximately 4,615 acres of land for the project (see Appendix 2 for patent to the land).

The major plant solid wastes which are landfilled in this landfill include miscellaneous plant operation wastes, common refuse, and special wastes. Evaporation ponds and wastewater basins are also provided for appropriate liquid wastes at the plant site. There is also a separate landfill for the combustion by-product's wastes (e.g., flu gas combustion wastes, fly ash, bottom ash, scrubber sludge).

3.1 Landfill Location and Description

Waste from miscellaneous plant operations, common refuse, and special wastes are disposed of in an approximately 52.0 acre on-site landfill. This property is zoned industrial and is located entirely inside the IPP property boundaries. All of the property within 1/4 mile of the landfill belongs to IPA except the BLM land to the north, which is zoned for multiple use. The BLM land is currently used for grazing. The landfill is located in Section 13, Township 15 South, Range 7 West, Salt Lake Meridian. More specifically, the land is described as follows:

That portion of land situated in Section 13, Township 15 South, Range 7 West, Salt Lake Meridian, in the County of Millard, Utah, beginning at the North 1/4 Corner of said Section 13, (LADWP Survey Point R013, Plant coordinates 21077.436 North, 13027.950 East) South 47.758 feet; then West 1307.515 feet to the True Point of Beginning of this description, said True Point of Beginning is correspondent to the Plant coordinate 21,035.000 North and 13,047.548 East, then from the True Point of Beginning East 1127.452 feet; than South 1185.0 feet; then West 2700.0 feet; then North 53.0 degrees East 1969.043 feet to the True Point of Beginning (which is an area of about 52.0 acres). From LADWP survey point R014(Plant coordinates 21082.758 North, 13027.950 East, (a point half way between Northwest corner of section 13 and the North 1/4 corner of Section 13)South 42.436 feet; then East 19.508 feet to True Point of Beginning.

However, an area around the outside perimeter of the landfill site will not have wastes put in it. This will allow for contouring of the above ground sections of the

landfill and provide clearance from the property line. This perimeter area is 35 feet on the north, 15 feet on the south and 50 feet on the east and 10 feet west for 3.2 acres. Therefore, the net total area for the landfill site is 48.8 acres, as shown on Figure 4. The amount of landfill area used to date is also shown on Figure 4.

Some area (8.0 acres total) has been added as a result of a professional survey of the marked landfill area. The southwest corner of the landfill was moved about 133 feet southwest along the diagonal line due to 1.85 degree angle error for an addition of 2.5 acres. Also, 173 feet was added on the east end of the landfill to include a previous used area and the east access road(4.58 acres); and the 35 foot north buffer area as part of the landfill area (0.92 acres).

3.2 Homes

The nearest home to the landfill is approximately 2.5 miles to the southwest. It is an old single-wide house trailer which has not been occupied for several years and seems abandoned. The nearest occupied home is about 5 miles to the south.

3.3 Watercourses

The nearest watercourse is the Sevier River, which is more than eight miles southeast of the landfill.

3.4 Rock Outcroppings

There are no rock outcroppings within or near the landfill site. The nearest rock outcropping is Fumarole Butte, which is approximately eleven miles northwest.

3.5 Industrial Buildings

The only industrial building within one quarter mile of the Landfill is the Active Reclaim Electrical Building, which is part of the IPP. This building houses electrical equipment to run the coal reclaim and radial stacker for the power plant.

3.6 Wells

The two water wells closest to the landfill are Well #1 and (C-15-6) 7ddb-1. Well #1 is an IPP water production well located 3,000 feet southeast of the landfill. It provides some process and drinking water to IGS. This is the well whose 15-year time of travel for the water overlapped the previous landfill area. This is why part of the previous landfill was taken out of service. Water is drawn from the 900 to 1300 foot level. Well (C-15-6) 7dbb-1 is approximately 7,000 feet northeast of the landfill withdrawing water from the 200 to 300 foot level. This well is a stock watering well owned by the BLM.

4.0 <u>DEFINITION OF WASTES</u>

All materials to be disposed of in the landfill will be nonhazardous types of wastes. The landfill will not accept any liquid wastes or hazardous wastes. It will not be used for any major operational waste such as grease or lubricating oil; however, it may contain items such as empty containers as defined by RCRA with negligible traces of liquids. These restrictions are designed to eliminate groundwater pollution. Note that the groundwater table is about 20 feet below the bottom of the landfill trenches.

The wastes which will be disposed of in the landfill will be broken down into different categories based on their generation periods and nature. These categories include miscellaneous operation wastes, common refuse, and special wastes. Following are definitions of these categories of wastes.

4.1 Miscellaneous Operation Wastes

This category includes all nonusable materials resulting from activities associated with construction work at IPP and its related facilities. The wastes will be mostly broken concrete, earth, rock, asphalt paving fragments, glass, plaster and plasterboard, manufactured rubber products, steel, wire, scraps of packaging materials such as wood, plastic, cardboard, metal containers, filler materials, and various office waste materials consisting mostly of paper and paper products.

Operation waste materials accumulated during plant operation and maintenance will also include most of the waste listed above. Included in this group are cleaning rags (often soiled with oil), cardboard, wooden boxes, wastepaper, oil sorbents, floor sweepings and housekeeping material, and other janitorial accumulations. Housekeeping material may include smaller amounts of coal, fly ash, and sludge.

Rags soiled with oil and oil sorbant blankets and socks will be squeezed so no free liquid is present before placement in the landfill. Also, oil filters will be hot drained and/or crushed before placement in the landfill.

4.2 Common Refuse

The kinds of waste included in this category are garbage or trash produced at the power plant. The waste materials involved are wastepaper, garbage from lunchrooms, as well as any other miscellaneous type of refuse that may be generated in the operation of the power plant. In addition, the IPP has a facility onsite (Community Center) that contains a laundry room, cafeteria, kitchen, television rooms, and recreation facilities which are used by both the employees at IPP and the general public. Common refuse from the Community Center and refuse generated from outside landscape activities such as lawn cuttings and tree trimmings are taken to our landfill. The laundry room, kitchen, and cafeteria are currently closed.

4.3 Special Wastes

Special wastes at IPP will consist of:

1. Large bulky items such as empty drums, large shipping crates, furniture, and other items of similar properties such as wood, metal, and plastic. Note: Things such as car/truck bodies, tires, machinery, or large electrical equipment are not put in this landfill. These items are generally salvaged to outside bidders or recycled through scrap dealers. Electrical wire is salvaged for the value of the copper, although small amounts may be put in the landfill. If any item of significantly different physical properties than

those listed is to be disposed of in the landfill, the Utah Division of Solid and Hazardous Waste will be contacted for prior approval. It is also the policy of IPSC to dispose of only empty drums in the landfill. Empty is defined as stated in 40 CFR 261.7. Empty 55 gallon drums are crushed to a height of 6 inches by either the drum crusher or the dozer that is used to compact the refuse. Also, small quantities of medical waste from the First Aid Station is discarded into the landfill.

- 2. Digested wastewater sludge from the sewage treatment plant/dead animals. Note: The sludge from the wastewater treatment plant is generated by cleaning out an aeration cell. The sludge is composed mostly of sand and dirt which has been blown in from the surrounding land. When cleaning a cell, the free standing water and sewage sludge is pumped to a different cell. The remaining sand/dirt and small amount of sludge is removed by a vacuum truck to be placed in the landfill. Special care will be taken to assure that no free moisture remains before placement in the landfill. The sludge from normally operating the sewage treatment plant is picked up by a contractor and hauled to approved disposal areas. The dead animals are usually domestic cattle or sheep that have been hit by trains delivering coal. In the past years there have been from 0 to 5 cows killed per year.
- 3. A small quantity of asbestos containing material (ACM) will be disposed of in the landfill at a separate and distinct trench dedicated for asbestos disposal. (Note: Asbestos is contained in miscellaneous gaskets, electrical breaker chutes, and asbestos contaminated clean up material.) The trench is clearly identified and marked. The total volume of ACM material per year will generally be less than what will fit in one 55-gallon drum, and asbestos contaminated cleanup materials such as personal protective equipment, glove bags, and the like may fill up to four 55-gallon drums per year. No ACM material will be accepted from off-site for disposal. The ACM will be moistened and double bagged as required by current asbestos work practices. The smaller bags will then be placed in

open head steel drums for disposal. The drums, either individually or on pallets, will be placed in the disposal trench. The trench will then be covered with three to four feet of soil before any equipment will be allowed to move over this area, which will protect the drums from being crushed.

The larger asbestos containing material or other suspected ACM materials may also be placed in this trench. These may or may not be placed into drums depending upon size constraints; i.e., large size material may be landfilled whole rather than being cut up to drum size, minimizing potentials for worker exposure or asbestos release. This asbestos will be placed in double bags and wetted before being placed in the landfill. Since the asbestos landfill area was in the part of the landfill that was removed from service, it has been moved. All of the asbestos waste was dug up and removed to the new location. The new location is in the northeast corner of the landfill (see figure 6). Figure 6A shows the area layout and how much has been used.

4.4 Excluded Wastes

Wastes which will be prohibited in the landfill are any free liquids, large quantities of combustion by-products wastes (e.g., flue gas emission control wastes, fly ash, bottom ash, scrubber sludge), metal cleaning solvents, boiler cleaning wastes, and any waste covered under RCRA as a listed or characteristic hazardous waste.

Excluded waste that qualifies as RCRA hazardous waste is sent to an approved Treatment/Storage/Disposal Facility (TSDF).

Metal cleaning and parts cleaning solvents are presently handled by a contractor (Safety Kleen), which picks up spent solvent and replaces it with new solvent. Free liquids such as boiler cleaning wastes which are nonhazardous are treated in the ponds or the neutralization basin and then sent by lines to wastewater ponds.

5.0 **VOLUME ESTIMATES**

The quantity of waste was estimated by the projected life span of IPP, the projected employee population of IPSC, the past experience of IPP, and by the landfill use to-date.

5.1 The Projected Life Span of IPP

The first unit of the plant began operation in June 1986, followed by the second unit in June 1987. The economic life of the plant is considered to be 35 years. The volume calculations for the common refuse and miscellaneous operational waste is based on a 35-year economic life after construction of the second unit. This means that there are about 17 years of projected economic life span remaining for IPP.

5.2 The Projected Population During Remaining Life of IPP

The operational phase (since 1987) of IPP has employed between 467 and 608 people. As of January 1, 2006, there are 483 IPSC employees. It is anticipated that there will be about the same number of employees over the remaining life of the project. In addition, as in the past, there will be various outside contractors continue to come onsite for maintenance and construction activities for short periods of time, as needed.

5.3 Past Experience From IPP Landfill

The original volume estimates of the construction and miscellaneous waste were based primarily on experience at similar plants. A total volume of 210,000 cubic yards was estimated for the construction waste category. However, from the actual landfill volume, only 172,000 cubic yards of waste were actually generated during construction.

5.4 Actual Landfill Use To-Date

5.4.1 Construction Phase (Through 1986)

A total of 172,000 cubic yards of landfill space was used to dispose of construction wastes from July 1982 through December 1986 [four trenches at 1,200 ft x 45 ft x 14 ft refuse (112,000 cubic yards) + two trenches at 1,300 ft X 45 ft x 14 ft refuse (60,000 cubic yards) = 172,000 cubic yards]. All onsite residence wastes generated during construction at the Community Center housing area were disposed of in the Millard County Municipal Landfill.

5.4.2 Operational Phase (Since 1987)

A total of 185,400 cubic yards of landfill trench has been used for land filling refuse from January 1987 through December 2005. The approximate amounts of space used per year is as follows (note that these values are the actual measured trench volumes of the landfill which have been used):

1987 - 10,000 cubic yards 1988 - 5.000 cubic vards 1989 - 5,000 cubic yards 1990 - 5,000 cubic yards 1991 - 5,000 cubic yards 1992 - 20,100 cubic yards 1993 - 25,100 cubic yards 1994 - 20,300 cubic yards 1995 - 19,500 cubic yards 1996 - 5,600 cubic yards 1997 - 4,500 cubic yards 1998 -5,300 cubic yards 1999 -3,300 cubic yards 2000 - 5,000 cubic yards 2001 - 5,000 cubic yards 2002 - 9,000 cubic yards 2003 - 13,600 cubic yards 2004 - 10,800 cubic yards 2005 - 8,300 cubic yards

Prior to the 1991 permit, daily coverage of refuse was not required. During this time 75 percent to 80 percent of the volume landfilled was refuse (the remaining 20 percent to 25 percent being soil). However, since the 1991 permit which required daily soil cover to be placed on the refuse, a much greater percentage of soils have been placed in the landfill than has refuse. As a result, the trenches have contained much less refuse and more soil since then.

Data from 1992 to 1995 shows that the trenches have contained about 15 percent refuse and 85 percent soil. A 15 percent refuse ratio is unacceptable to IPSC as the landfill would be full in a short time. New techniques have been implemented, such as, hauling more trash on one day and none on others. Cover soil placement and compaction procedures

have been improved. In calculating the future life span of the landfill in 1996 we used a 33 percent ratio of refuse to cover. It is hoped that with the use of improved techniques, the ratio can reach 50 percent. For the years 1996 thru 2000 the ratio of refuse to cover has reached 53 percent. In 2001 through 2005 the ratio was 39 percent. In this permit period the soil coverage was required on a monthly basis or whenever blowing waste became a problem. Part of this decrease resulted from using the area northwest of the main trenches in 2003 to 2005. Sometimes full width trenches were not able to be used due to past construction wastes.

5.5 Projected Landfill Volume and Life

5.5.1 Total Projected Volume Available

The new landfill area is 8 acres larger than the previous area, and the landfill trench volume has increased (711,500 vs. 669,600 cu. yds) This is due to the addition of 173 feet on the East end of the landfill, (4.6 acres) to include area used by construction in the early 1980's and the access road. A survey of the landfill area was conducted to square up the landfill boundaries on a north-south, east-west layout. The survey revealed the southern boundary was not an east-west line. The boundary needed to be moved 133 feet south along the angled west boundary (2.5 acres). The north buffer area of 35 feet was left off the map (0.9 acres). The calculations for projected volume and life span are based on trenches 15 feet deep by 50 feet wide. As of January 1, 2006 the remaining unused volume of space in the landfill is 354,100 cubic yards. [8 trenches for a total length of 12,747 feet].

5.5.2 Total Time Left

The weight of the refuse being landfilled has been weighed on scales since 1992. The average weight of the refuse has been about 934 tons per year. This is equivalent to about 3,113 cubic yards of refuse per year based on a density of 600 pounds per cubic yard. The density of 600 pounds per cubic yard comes from comparing the compaction techniques of our refuse versus

a common municipal landfill which often have densities of 1,200 pounds per cubic yard (source: City of Los Angeles landfills). Because our refuse is not compacted as well and is different from a city, a conservative estimate of 600 was used.

Applying the ratio of 50 percent refuse to soil cover as discussed in Section 5.4.2 above, a total of 6,226 cubic yards of trench volume per year will be used. This gives a remaining anticipated life span of the landfill of about 56.9 years, 354,100 cubic yards divided by 6,226 cubic yards of trench per year). In the last 10 years the refuse to soil ratio has averaged 43.6 percent. At that rate (354,100/7,040) the landfill would last 50.3 years until 2055. If based on the operation years 1987 to 2005 the landfill would last 36.3 years until 2041 (354,100/9,760). Figures 4, 6, and 7 show the area of landfill used to date.

5.5.3 Projected Landfill Volume Required for the 35 Year Economic Life of the Plant

1982 - 1986	1987 - 2005	2005 - 2022	Total
172,000	185,400	165,900	523,300 C.Y.*
172,000	185,400	119,700	477,100 C.Y.**
172,000	185,400	105,800	463,200 C.Y.***

^{*} based on operation years

During the economic life of the plant, Between 463,200 and 523,300 cubic yards of the 711,500 cubic yards of volume would be used, which is about 65 percent to 73.5 percent of the volume available.

6.0 DESIGN OF LANDFILL

The landfill is designed and located in the area on the plant site as shown in Figure 2. In order to provide environmental and health safeguards, the landfill will be constructed and operated in accordance with the following design criteria and operation plan contained

^{**} based on last 10 years

^{***} based on 50 percent soil ratio

herein. The design criteria and operation plan are based on the Utah State Department of Environmental Quality, Division of Hazardous and Solid Waste, "Code of Solid Waste Disposal Regulations, as Amended."

6.1 Design Criteria

The estimated total of miscellaneous solid waste volume is between 463,200 and 523,300 cubic yards over the entire 35 year economic life of the plant. The total design volume for the landfill is 711,500 cubic yards as per the plan. The allotted area for the landfill is 52.0 acres. However, only 48.8 acres of the allotted area will actually be used for the landfill.

Approximately 711,500 cubic yards of refuse can be contained in the 18 trenches. The trench dimensions are approximately 15 feet in depth, 50 feet in top width, and have a side slope of 1:1 or steeper. The trenches range between 1,200 and 2,610 feet in length. A minimum of 20 feet will separate each trench horizontally (Figure 6).

Soil excavated to construct the trenches will be used to supply the cover as refuse is put in the landfill to prevent exposed or blowing refuse. Once ground level is reached, the remaining soil will be spread over the trench and the 20 feet between trenches. This will leave a cover of two to six feet of soil over the landfill. This is different from the proposal in the original permit of placing refuse on top of the underground cells and then covering these cells with soil producing 20 foot mounds above the original ground level. Also, working below ground level makes operation less difficult for our equipment.

The landfill will be constructed as shown in Figure 3. The maximum depth of each trench will be 20 feet, with 15 feet depth being the normal depth. The width will be a maximum of 50 feet at the top of the trench. The slope in the trench will be from 1:1 slope to vertical. Past experience has shown a vertical slope is stable in the type of soil that is present. When a vertical slope is used, the trench depth will be limited to 12 to 15 feet. Soil excavated to construct new trenches will be stockpiled in the area to the north of the trench.

The waste will be compacted into 12 inch maximum lifts and will be covered with a minimum of soil to prevent exposed or blowing refuse. These lifts are usually on an angle (Figure 5). Once the lifts are at ground level, the soil not used for cover will be leveled over the 50-foot wide trench and 20-foot space between trenches. This will give a soil cover of two to six feet, which will be the height of the landfill above existing grade.

To prevent ponding in the landfill trenches, the waste lifts will be sloped to drain any excess storm water runoff away from the lifts into the bottom of the trench with no waste. The storm water runoff will be contained within the landfill perimeter and dispersed through evaporation. Earthen berms and slopes will be constructed around the landfill operating trenches to prevent additional storm water runoff from entering the excavated trenches.

The land at the landfill is generally flat, with a gentle slope to the west at about 1 percent (15 foot drop in the 2,700 foot east-west direction). The soil is very sandy, so runoff is almost nonexistent because the water soaks in before it can flow very far. The used landfill area is contoured to hold water to promote revegetation. Should any runoff occur, it will follow the natural drainage to the west until it reaches the ditch along the diagonal road. This ditch drains to the southwest to the settling basin. Any surface drainage to the south will drain along the railroad tracks until it joins the ditch to the settling basin. The settling basin is a clay-lined pond of about 125 acre-feet capacity (see Figure 8 for the drainage pattern).

The potential for ground water pollution should be minimal due to the large clearance (greater than 20 feet) between the groundwater table and bottom of the landfill and the low rainfall in this area (8 inches per year).

A soil description of the landfill site is given by the soil borings from Ertec Western, Incorporated (see Appendix 1). The groundwater table in the landfill site is approximately 40 feet below the surface.

7.0 OPERATION PLAN

A 52-acre tract of land in the generating station is dedicated and serves as the landfill. This landfill is an industrial class IIIb landfill.

7.1 Purpose

The purpose of this operation plan is to define the methods and criteria under which the landfill will be operated. It is further anticipated that the plan will also serve as the basis of permit approval by the Utah Department of Environmental Quality, Division of Solid and Hazardous Waste.

7.2 Responsible Parties

7.2.1 IPSC President & Chief Operations Officer

The IPSC President & Chief Operations Officer (Plant Manager) is in charge of all operations at the IPP. The Plant Manager is ultimately responsible for operation of the landfill and may further assign this duty to other employees under his direct or indirect supervision. Under his direction, records are kept of the amount of solid waste accepted in the landfill. At the present time the persons assigned to keep these records are the Operations Yard Supervisor and the Environmental Engineer.

7.2.2 Utah Department Environmental Quality, Division of Solid and Hazardous Waste

The Division of Solid and Hazardous Waste is the permitting agency at the State level. Approval to operate the landfill will be obtained from this agency by IPSC. Approval will be conditional and dependant on adherence to the conditions of the operating plan.

7.2.3 Other Agencies

Permission to operate the landfill from the Millard County Planning and Zoning Commission has been obtained by IPA in the Conditional Use Permit granted by said commission for IPP on January 5, 1980. In accordance with the Conditional Use Permit, Conditions (Section J which was for water,

wastewater, air quality and solid waste), IPA submitted a copy of the Operation Plan and monitoring and compliance reports to the County Planning and Zoning Commission.

7.3 Site

7.3.1 Site Security and Access

The landfill is located within a portion of the IPP plant site which is enclosed by an eight foot high chain link fence topped with a one foot extension of three barbed wire strands. A perimeter road has been constructed parallel to the inside face of this security fence to allow for patrol, inspection, and repair of the fencing. The landfill section for waste disposal has been set back a minimum of 35 feet from the security fence on the north limit of the landfill.

Access to the landfill is provided by a graded gravel all-weather road that is connected to the internal road system of the plant. The plant site entry to the landfill is controlled by the security guard stations which screen entrance to the plant by outside entities.

7.3.2 Site Preparation

Site preparation will include the clearing of vegetation, grading of internal access roads, placing of earthen berms and slopes around the landfill trenches, and the stripping and stockpiling of cover soils. These activities will be done only as necessary for each phase of operation, and prior to any landfilling operation. Clearing of vegetation will be done only in areas needed for the disposal trenches and access to the trenches. The cleared vegetation will be incorporated in the cover soil stockpile or in covering of the previous cell of the landfill.

7.3.3 Phasing of Work

Excavation and clearing shall be planned and phased such that a maximum of about three acres of land are disturbed at any one time. During excavation, the topsoil will be stockpiled so that it can be used for final cover

of that section or used immediately on the previous section. Some of the excavated earth shall be used to form a berm or slope around the open work area to prevent surface runoff from either entering into or discharging from the landfill trenches.

Each open trench area will be completely filled to the original grade before placing any refuse in a new disposal trench. When finishing an old trench, the new trench will be started before completing the old trench. This assures trench space is always available.

7.3.4 Earth Moving Equipment

Tractors, trucks, compactors, and backhoes will be available to evacuate and clear the land for the landfill. Equipment such as crawler dozers, rubber-tired dozers, scrapers, water trucks, and similar equipment may also be used in the landfill operations. A list of the current on-site equipment follows:

Equipment	Model
Guzzler Vacuum Truck	NX
Mack Dumpster Truck	Valuliner
John Deere Dozer	D-850B
Fiat-Allis Dozer	FD-30
Mack Dump Truck	10 Yard
Mitsubishi Track Hoe	MS-450-8
Cat Backhoe	426
2-Cat Water Wagons	(8000 gal) 621 E
Allis Chalmers Tractor	8070
Great Plains Seed Drill	Native Species Drill
2 Kenworth Tractors w/Bottom Dump Trailer (27 yd)	W900B
Trojan Loader	4000
Dyna-Pac Compactor	CH-61

Equipment	Model
Cat Scraper	651 E
Trojan Grader	155
1 LeTourneau Dozer	D-800
1 Cat Dozer	854
Cat Grader	14G
Cat Loader	980F
3 Bobcat Loaders	1835C, 875,743

7.3.5 Fire Control at the Landfill

Open burning or any other burning of refuse at the landfill is prohibited. In the event there is a fire involving the landfill at Intermountain Power Facility, the appropriate response will include all or parts of the following:

Reporting to the 24 hour manned control rooms by phone or radio, dispatching of command level supervisors to size-up the situation and request resources, dispatching of the onsite structural level fire brigade with the appropriate equipment, dispatch of the IPP fire truck which is rated at 1,000 gpm with 500 gallons of water, using the AFFF Foam Wagon with monitor nozzle, and by using any of the heavy equipment listed in Section 7.3.4.

Because of the size and location of the IPP landfill it is planned to deal with fires at the landfill in-house as much as possible, however a mutual aid agreement is in place with the Delta City Fire Department to respond, upon request.

7.4 Operations

Landfill refuse will be collected as required from metal containers (dumpsters) placed at strategic locations on the plant site. Filled dumpsters are transported to the landfill, being careful to avoid littering during transport. Transport will typically occur once to twice per week.

At the landfill site, the refuse will be compacted in layers to maximum layer thickness of 24 inches. As per the new regulations, IPSC will cover the refuse monthly, at a minimum. Should the refuse or weather conditions show a wind blown problem exists, the refuse will then be covered as needed. All appropriate aspects of the design criteria, as previously set forth, will be strictly maintained during daily operations.

The landfill will be kept as clean as possible at all times. The landfill and surrounding areas will be inspected, at a minimum, semi-annually or as needed to help control windblown litter. If inspections show a need, the landfill will be policed to pick up the windblown litter.

Dust-control measures will be taken to limit fugitive dust from the landfill as needed. These dust-control measures may include sprinkling water on exposed soils, moistening of soil being worked during excavation, grading and filling operations and use of water or dust-control palliatives on access roads. Roads may be covered with other roadbase materials such as limestone chips or bottom ash to reduce fugitive dust.

Rodent and insect control will primarily be accomplished by covering the refuse. This will prevent access by insects and rodents. Refuse could be covered more frequently should a problem exist. Should an insect or rodent problem continue, a pest control contractor will be on call. The area will be sloped to prevent standing water (with less than 8 inches of annual rainfall, this should not normally be a problem).

During hours of operation of the landfill, all employees working at the landfill will be under the direct supervision of an Operations Supervisor (Yard Supervisor). These employees are normally the heavy equipment operators who dig and backfill the trenches and haul refuse to the landfill.

The Operations Supervisor will supply information to the Environmental Group so records of quantity of refuse in the landfill can be maintained. Refuse quantity will be determined by weighing the refuse and by measuring the length of the filled trenches.

The Environmental Group will survey the landfill to locate any new trenches to assure proper placement. The Environmental Group will also record the volume or weight of refuse placed in the landfill for each calendar year and will update and submit any application to the State for permit renewal.

7.4.1 Inspections

Formal inspections of Sanitary Landfill will be conducted quarterly as stated in R315-302-(5)-(a). Quarters will Calendar quarters (January 1 through March 31, April 1 through June 30, July 1 through September 30, and October 1 through December 31). With the small size of IPSC's landfill, quarterly formal inspections will identify problems in time to correct them before they harm human health or the environment. In addition, the Operators that haul waste to each landfill will report any condition to their supervisor not consistent with normal operating procedures for that landfill. The inspection form used for the quarterly inspection is in Appendix 4.

7.4.2 Daily Operating Records

The Sanitary Landfill at IPSC is a small class IIIb landfill that has a yearly throughput of about 1,000 tons per year. All material is hauled to the landfill in metal dumpsters. These dumpsters are weighed as they are hauled to the landfill. The tare weight of the truck and each empty dumpster has been entered on the daily weigh sheet. Each full dumpster weight is entered on this sheet for the appropriate dumpster number and the day it was hauled to the landfill. The daily sheet is an Excel spreadsheet that calculates the total weight of material placed in the landfill each day and week. Because IPSC's truck scales weigh in pounds instead of tons, all weights are recorded in pounds to the nearest 10 pounds. At the end of the year the weights are totalized and converted to tons. This sheet is filled out on dates when waste is hauled to the sanitary landfill. See Appendix 5 for a copy of the daily operating record.

Since the waste comes only from IPSC's site, the type of waste received is not recorded. The waste type does not vary and is described in the

application. On the back of the weigh sheet (second page in the attachment) is a space to record when cover material is placed over the waste. Training records are kept separate with the Training Department. Monitoring of groundwater and gas is not required for a Class IIIb landfill. Inspection logs are kept by the Environmental Group.

7.4.3 Training for Operation of the Landfill

The same people operate both the Sanitary and Combustion By-Products Landfills so training applies for both landfills. The people who operate the landfills are in the job classification "Fuel Equipment Operator." These are the Operators who run usually mobile equipment such as trucks, backhoes, and graders as opposed to fixed equipment such as the boiler in the power plant. An Operations Supervisor is in charge of the Fuel Equipment Operators. Work at the landfills comprise only part of jobs covered by the Fuel Equipment Operators.

The training schedule for the Fuel Equipment Operators and the supervisor is attached in Appendix 6. Subjects of the training and frequency of refresher training is shown on the schedules.

In addition, a specific training course pertaining to operation of each landfill will be initiated this year. Below is an outline of material covered in this training. Training will cover both landfills. This specific training will be required for Fuel Equipment Operators once every two years beginning in 2006.

- General layout and design of each landfill.
- Type of waste that can be placed in the Sanitary and Combustion By-Products Landfills.
- Wastes prohibited from being placed in each landfill.
- Procedures for placing waste in each landfill. This is to include cover and watering to keep waste confined to landfill.
- Procedures to control fugitive dust from hauling activities.

7.5 Rehabilitation

Rehabilitation measures will be taken as soon as possible after any phase of the landfill cell is filled to the maximum design height. These measures will include the placement of a layer of earth and cover soil to a minimum thickness of two feet over the filled area, dressing and grooming of exposed slopes, revegetation, and erosion control. Revegetation will take place during the spring or fall months to maximize successful plant growth.

The earth and topsoil layer will be compacted by truck or equipment tire rolling. All slopes will be contoured by rounding at the top. Horizontal areas will be sloped to drain excessive rain. During revegetation, discing will be done across the slope to help hold moisture and to promote growth of the revegetation. Average rainfall is about 8 inches (1938 - 2000 average).

The project has, in the past, contracted with a rehabilitation and vegetation consultant who will be furnishing revegetation and erosion control studies for plant site. These studies will be implemented, as applicable to the landfill area, as part of the rehabilitation measures for each phase.

7.6 Alternative Waste Disposal Sites

The need for an alternative waste disposal site is an unlikely condition as IPSC owns the land and operates the Sanitary Landfill. Should sanitary waste be prevented from being placed in the Sanitary Landfill for any reason, three options are available.

- Option 1: At IPSC, the sanitary waste is collected from around the site and placed in metal dumpsters. These dumpsters on site are two sizes, 28 and 37 cubic yards. If waste is only prevented from being placed in the landfill for a short time (up to 14 days), the sanitary waste can be stored in the dumpsters.
- Option 2: In the 50 acre approved landfill site, another trench could be dug
 in a different area if the active landfill area could not be used for more than
 14 days. Theis trench would follow the plan of the landfill and be located in
 an area that would be used at a later time.

 Option 3: If all areas of the landfill could not be used, the waste could be hauled to the Millard County Landfill near Delta, Utah. This landfill is within 20 miles of the plant site.

Equipment breakdown could prevent the digging of the trenches and hauling the sanitary waste to the landfill site. If the large backhoe that normally digs the trenches is not available, an option would be to use other pieces of equipment to dig the trenches. IPSC has a smaller backhoe, two dozers that could dig a trench, and two large wheeled dozers that move coal on site. Renting equipment or having a local contractor dig the trenches is also an option.

Should the truck that hauls the metal dumpsters to the Sanitary Landfill break down, several options could be used. If the truck is down for a short time, the waste can be stored in the metal dumpsters. We have a 10 yard truck that could haul waste. Also, IPSC could rent a truck to haul the dumpsters or Millard county has a dumpster truck that could be hired to haul waste.

8.0 LIST OF FIGURES

Figure #1 Site Location Map

Figure #2 Landfill Site

Figure #3 Landfill Refuse Calls

Figure #4 Topographic Map of Landfill R450-301-4a (Required Map)

Figure #5 Refuse Lift Placement

Figure #6 Landfill Layout

Figure #6a Asbestos Area

Figure #6b Previous Landfill Layout

Figure #7 U.S.G.S. Rain Lake Quadrangle

Figure #8 Natural Surface Drainage

TABLE 1

Total Volume of Solid Waste Estimates

Construction Phase	Volume Refuse (Cubic Yards)	Volume Refuse Plus Cover (Cubic Yards)	Tons Refuse To Landfill (Tons)
1982	9,600 C.Y.	12,000 C.Y.	Not weighed
1983	16,000 C.Y.	20,000 C.Y.	u
1984	40,000 C.Y.	50,000 C.Y.	u
1985	48,000 C.Y.	50,000 C.Y.	ec.
1986	24,000 C.Y.	30,000 C.Y.	u
Total	137,600 C.Y.	172,000 C.Y.	
Operation Phase	Volume Refuse (Cubic Yards)	Volume Refuse Plus Cover (Cubic Yards)	Tons Refuse To Landfill (Tons)
1987	8,000 C.Y.	10,000 C.Y.	Not weighed
1988	4,000 C.Y.	5,000 C.Y.	u
1989	4,000 C.Y.	5,000 C.Y.	u
1990	4,000 C.Y.	5,000 C.Y.	и
1991	4,000 C.Y.	5,000 C.Y.	и
1992	3,011 C.Y.	20,100 C.Y.	903.3 Tons
1993	3,765 C.Y.	25,100 C.Y.	1,129.3
1994	3,038 C.Y.	20,300 C.Y.	915.1
1995	2,925 C.Y.	19,500 C.Y.	911.1
1996	1,941 C.Y.	5,600 C.Y.	582.3
1997	2,520 C.Y.	4,500 C.Y.	755.9
1998	3,070 C.Y.	5,300 C.Y.	920.9
1999	2,111 C.Y.	3,300 C.Y.	631.7
2000	3,100 C.Y.	5,000 C.Y.	930.2

Grand Total	20,5063 C.Y.	357,400 C.Y.	13,075.2 Tons
Total	67,463 C.Y.	185,400 C.Y.	13,075.2
2005	3,319 C.Y.	8,300 C.Y.	995.8
2004	3,789 C.Y.	10,800 C.Y.	1136.8
2003	4,041 C.Y.	13,600 C.Y.	1,212.4
2002	4,290 C.Y.	9,000 C.Y.	1,287.1
2001	2,543 C.Y.	5,000 C.Y.	763.1

Projected Use 2006 and beyond.

3,550 C.Y./yr** 3,072 C.Y./yr* 9,760 C.Y./yr** 7,040 C.Y./yr*

Projected Capacity of Landfill based on 1996 through 2005

Total Capacity Used as of	01/06	357,400 C.Y.
Total Capacity Unused as of	01/06	354,100 C.Y.
Total Capacity of Landfill		711,500 C.Y.

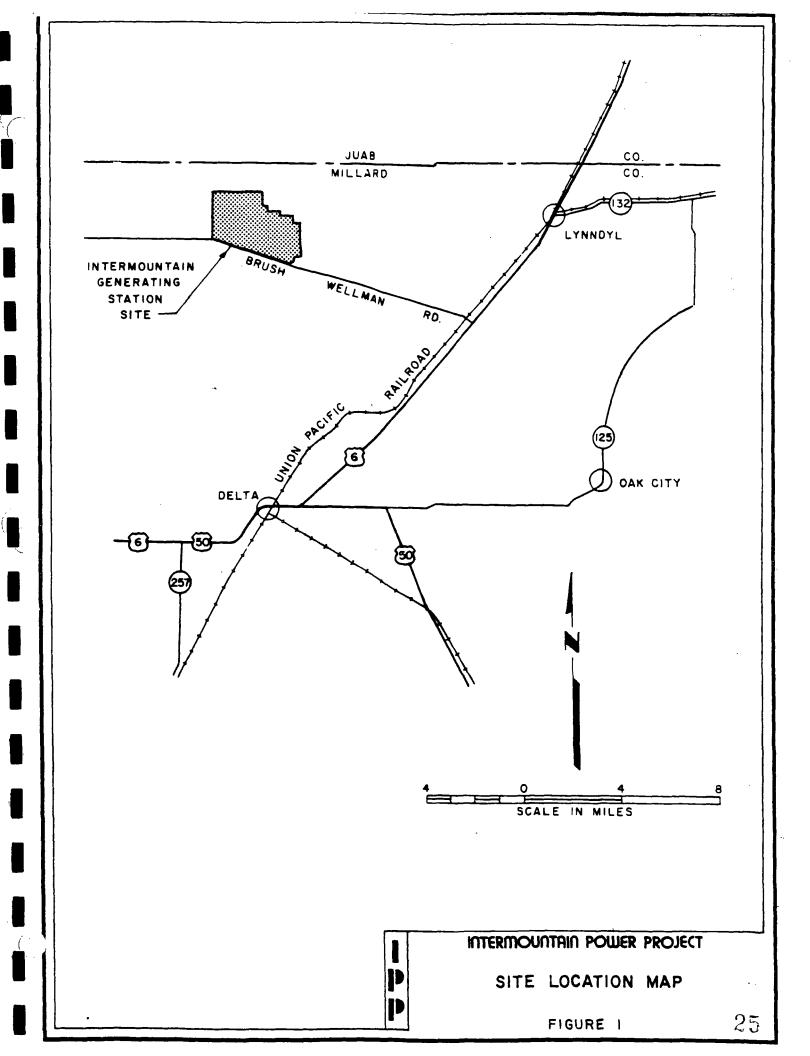
Projected Trench Usage 2006 to 2022

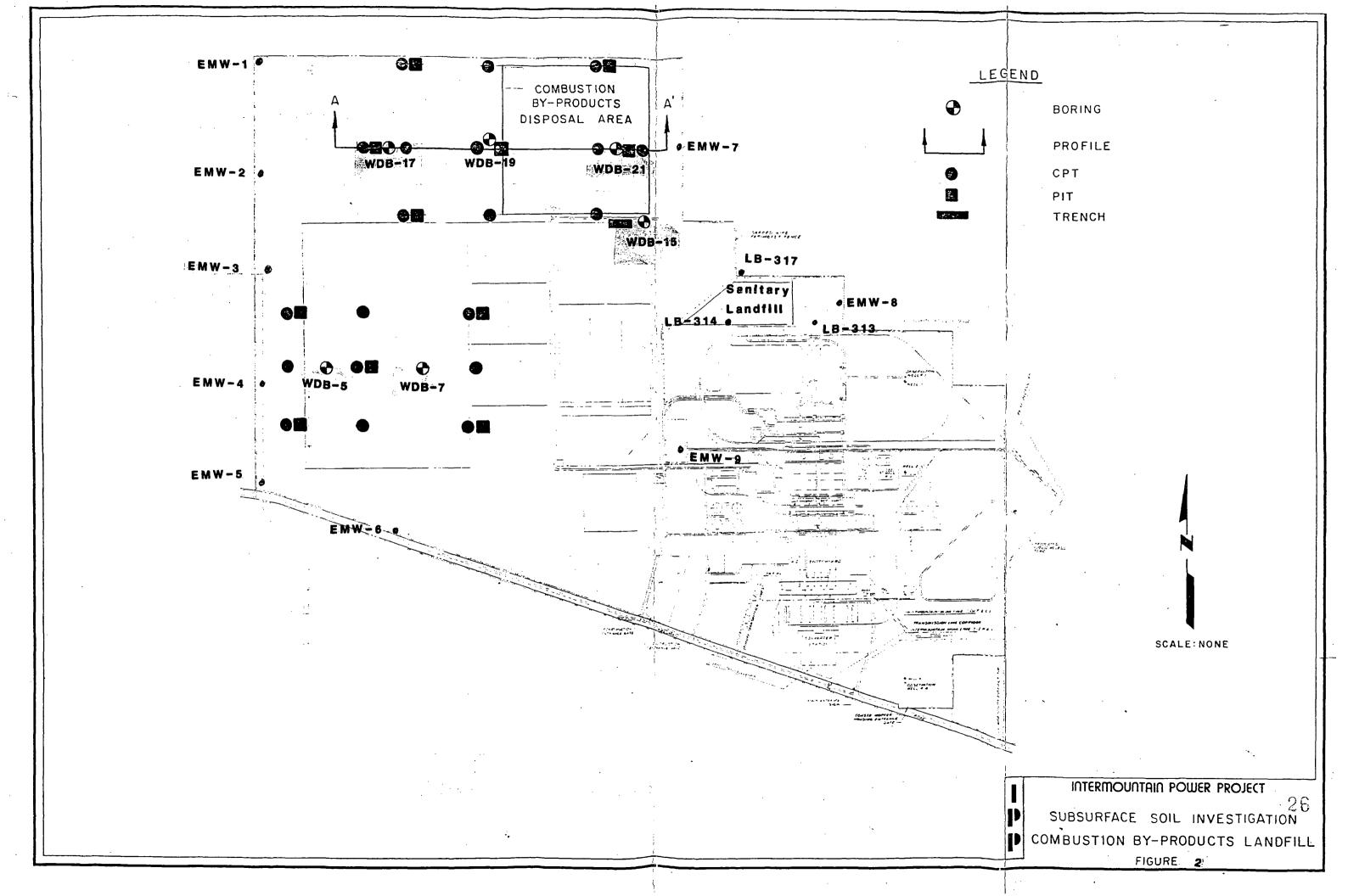
Based on last 10 years usage	165,900
Based on Operation Phase	119,700
Percentage of Landfill Used Through 2005	50.2%

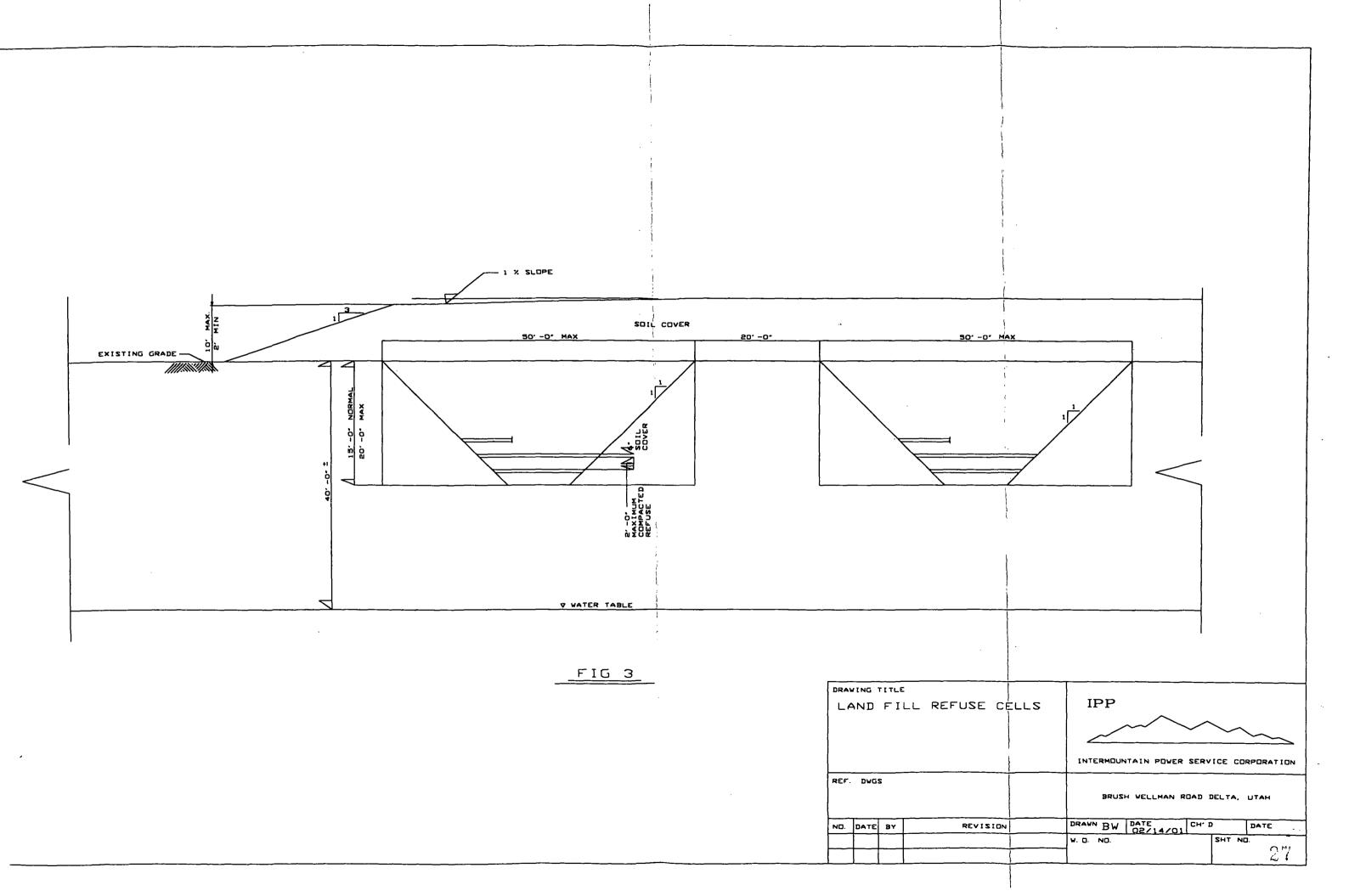
The total capacity of landfill remaining as of 1/1/06 is 49.8 percent of space available. Based on the last 10 years IPSC would use another 23.3 percent of the volume by 2022 or 73.5 percent of the total landfill. This would leave 188,200 C.Y. left unused. At the current rate of use the landfill would last another 19.3 years until 2041. It is also projected that the power plant will operate longer than 2022. IPSC is also looking at the possibility of adding a third unit at the site. If that happens the landfill will not last as long, due to construction waste and more waste generated from operating a third unit.

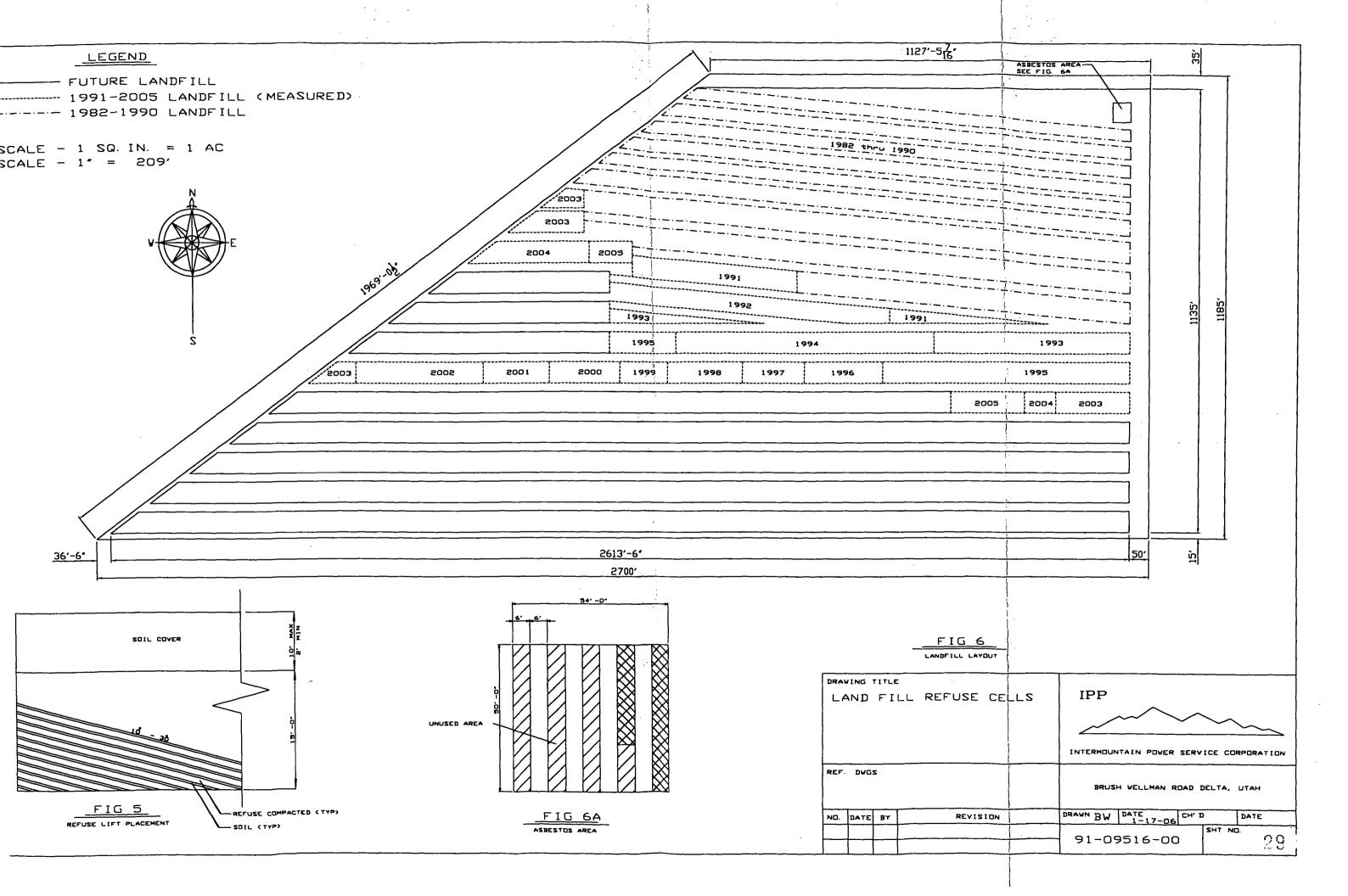
^{*} average of 1996 through 2005

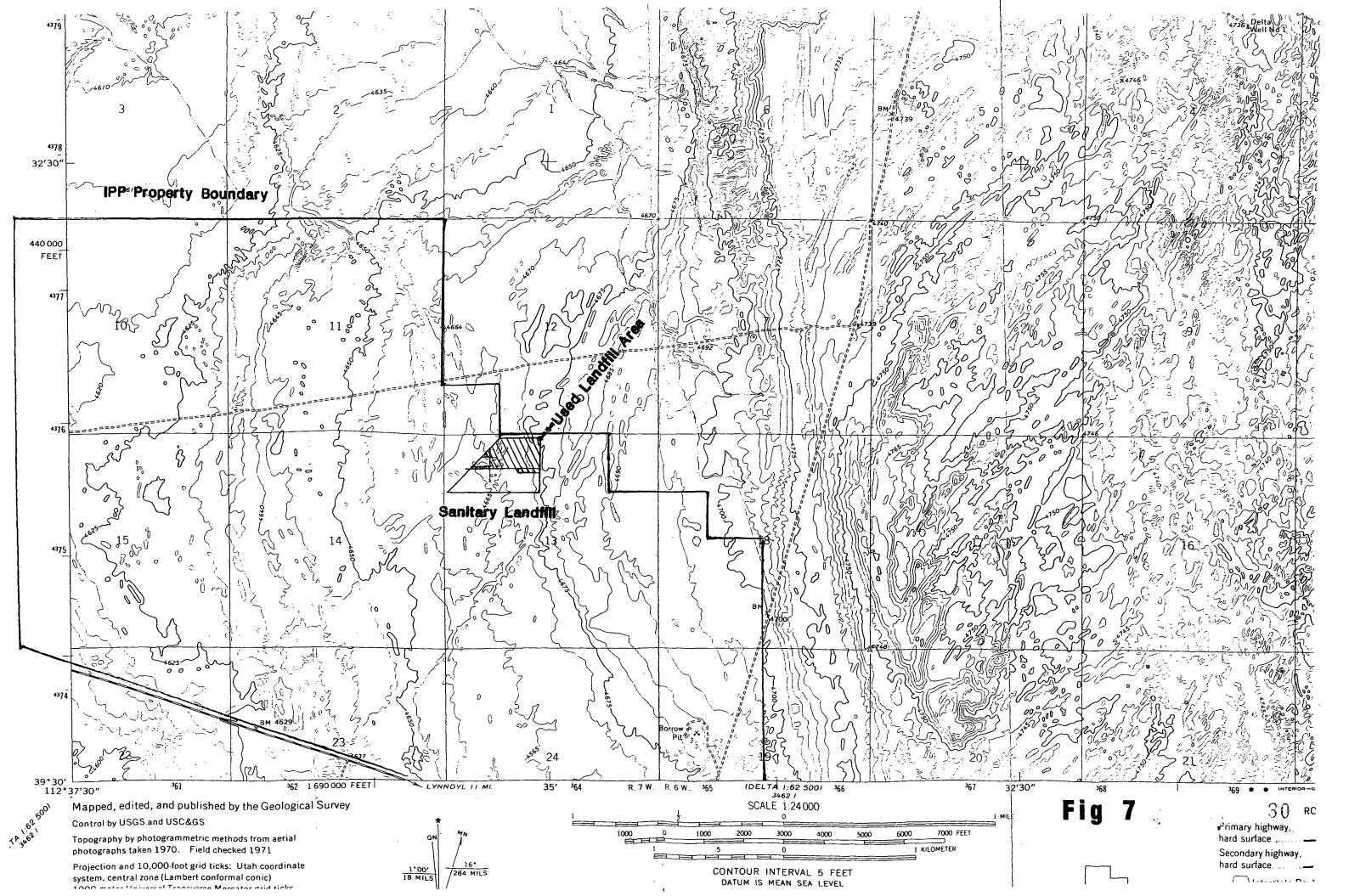
^{**} average of Operation Phase 1987 through 2005

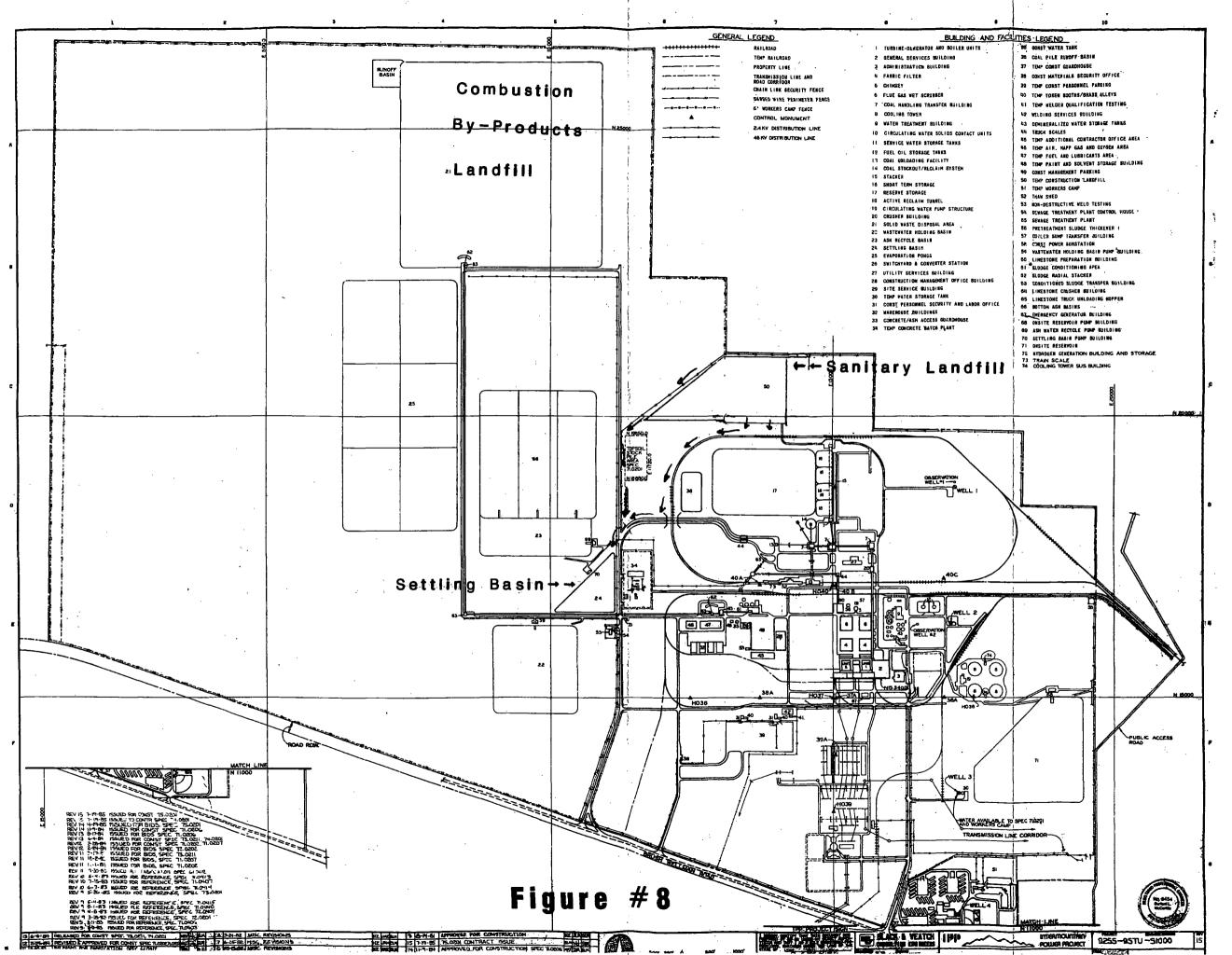












Appendix 1

Soil Boring Data and Well Logs for the Sanitary Landfill

APPENDIX BORINGS

This appendix presents a description of field procedures and logs of borings drilled and sampled in the Waste Disposal area of the Intermountain Power Project. Six (6) small diameter (6-7/8 inch) exploratory borings were drilled at locations shown in Figure 1 (main text) using rotary wash drilling equipment, to depths ranging from 50 to 90 feet. The purpose of drilling rotary wash borings was to:

- o determine the subsurface stratification,
- o obtain high quality undisturbed soil samples, for laboratory testing using a Pitcher Sampler,
- o establish a network shallow of groundwater observation wells.

Soil Classification

Soil samples obtained from the borings were visually classified in the field by qualified soils technicians. Subsequently, these classifications were verified in the field and Long Beach laboratories by visual classification and by index testing. Visual classifications were conducted in accordance with ASTM D-2488. Classification based on index tests were in accordance with Unified Soil Classifications System (ASTM D-2487). The soil descriptions shown on the boring logs represent a composite of all soil classification data generated during the investigation.

Groundwater Observation Wells

Each of the six borings was converted to a groundwater observation well. Each boring was initially drilled for sampling purposes using bentonite drilling mud and a 4-7/8-inch bit. The conversion to a groundwater monitoring well involved the following steps:

- 1. The boring was reamed out to 6-7/8-inch diameter using Revert as the drilling fluid.
- 2. Upon completion of step 1, the boring was flushed until water coming out of the hole was clear.
- 3. PVC casing with 0.40-inch slot size well screen was placed in the hole (see sketch).
- 4. The annulus between the casing and borehole wall was backfilled with pea gravel, site soils, bentonite pellets, and grout as shown in the sketch.

GROUNDWATER OBSERVATION WELL DETAIL CASING DETAILS ANNULUS FILL DETAILS DEPTH INTERVALS (FT) CEMENT GROUT SEAL 0-5 0-5 SOLID 3" I D SCH 40 PVC CASING 5-12 PE A GRAVEL 12-27 55-58 27-30 3" 1 D 0 040 " SLOT PVC WELL SCREEN 51-71 30-43 NIL NIL NIL NIL NIL BOTTOM CAP

See Figure #2 for Well Location

- BORING LOG EXPLANATION SHEET

S	Standard Split Spoon (ASTM D-1586)
D	Orive sample
P .	Pitcher tube sample (ASTM D-1587)
PERM	Permeability Test (See Appendix D)
ES	Expansion - Shrinkage Potential Test (See Appendix D)
CON	Consolidation Test (See Appendix D)
DS	Direct Shear Test (See Appendix D)
บบ	Unconsolidated Undrained Triaxial Shear Test (See Appendix D)
c .	Compaction Test (See Appendix D)
SC	Specific Gravity Test (See Appendix D)
	Groundwater Level

Percent Recovery = $\frac{\text{Length of soil in the sampler}}{\text{Length of sampler penetration}}$

Undrained shear strength = pocket penetrometer test results unless otherwise specified

Grain size distributrion ASTM D 422

Atterberg limits

ASTM D 423 and D424

Moisture content

ASTM D-2216

Silty clay (CL), sandy clay (CL)

Clay (CH)

Sand (SP) and (SP-SM), gravelly sand (SP)

Sandy silt (ML), clayey silt (ML), silt (ML), silty clay and clayey silt (CL-ML)

Clayey sand (SCI)

Silty Sand (SM)

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OI PE I	0 M	2	98	34	14	>4.5	22	98							p	87	25.	SILTY CLAY (CL-CH), brown to reddish brown medium to high plasticity, stiff to hard, isolate thin lenses of silt and silty sand.
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																hoo		SANDY CLAY (CL), gray, stiff, low to mediu plasticity, thin layers of silty sand and sand beld 68'.
								101							۴	100	1 ,	CLAY (CH), reddish brown, hard, high plasticity.
						>4.5		97							٢) o	a	SAND (SP), gray brown, medium dense, fine.
						> 4.5	118	10							1	•	1	SILTY SAND (SM), gray brown, medium der

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INTERMOUNTAIN POWER PROJECT 80-164

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						1.3	27	10				P	100	60	T.D. = 62'

LOG OF BORING NO. WD-8-17

TYPE OF BORING: ROTARY WASH

DATE DRILLED: 4-3-80

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ON O 10								20	97		P	88		
3.3 25 94	Eή		12	88	23	5	2.0	21	97		P	72	19 19	SANDY SILT (CL-ML), light brown, stiff, slighth plastic.
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2.5 32 91	ΕĦ				45	24		36	86		P	100	.0-	
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	,						1.8	93	28		P	96	P	SILTY SAND (SM), gray, dense to very dense, fi
TYPE OF BORING: ROTARY WASH									<u> </u>					
DATE DRILLED: 4-3 & 4-80 80-164									'WA	sh				INTERMOUNTAIN POWER PROJECT 80-164

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						3.8	24	100			۴	84		CLAY (CH), gray, very stiff, high plasticity,
											<u> </u>			SILTY SAND (SM), gray, very dense, fine.
						4.5	23	104			P	80	_	SILT (ML), light brown, hard, low plasticity to nonplastic.
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ELEVATION: 4633'

TYPE OF BORING: ROTARY WASH

DATE DRILLED: 4-3 & 4-80

fucare S INTERMOUNTAIN POWER PROJECT

80-164

LOG OF BORING NO. WD-8-19

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																			SAND (SP), brown, medium dense, fine.	
									Ц.	Ц			$\downarrow \downarrow$]	L		1-		
																Р	80		SILTY SAND (SM), brown, dense to very dense	158,
																			fine.	
																Р	95		SANDY SILT (ML), light brown to brown, ve	ery
							l												stiff to hard, low plasticity to nonplastic.	j
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						-													SILTY CLAY and CLAY (CL-CH), light brown gray, very stiff to hard, medium to high plasticit thin silt and very fine sand seems below about 3	30;
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DATE DRILLED: 4-4-80

TYPE OF BORING: ROTARY WASH

INTERMOUNTAIN POWER PROJECT 80-164

LOG OF BORING NO. WD-8-21

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	1	N SAND	S PINES	LIQUID LIMIT (%)	PLASTICITY INDEX (N)	UNORAINEO SIENGAR STRENGTH (TSF)	MOISTURE CONTINT	DAY DENSITY IN	a	(B	RESI	TRA' STAN VS/F	NCE		REFUSAL	SAMPLE TYPE	* AECOVEAV	DEPTH (FEET)	LITHOLOGIC DATA
			56		,		20	103			0					Ρ		10 -	SAND (SP), brown, loose, medium to fine, medium gravel SANDY CLAY (CL), brown, medium stiff, low plasticity
	3	/2	20				19	91							_	P		20-	SILTY SAND (SM), light brown, medium to fine SAND (SP), brown, medium dense, fine
							27	87								P	92	25	SANDY SILT (ML), brown, stiff, low plasticity CLAYEY SAND (SC), brown, dense, fine, high plasticity
							25	91								P	48	30	SILTY SAND (SM), brown, dense, fine
							32	89								P	56	35	SANDY SILT (ML), brown, medium stiff, low plasticity, fine sand
				45	15											P		1	SILTY CLAY (CL), brown, very stiff, high plasticity, thin inner beds of fine sand SAND (SP), brown, medium dense, medium to fine
		, 					33	88							- ·	P	56	50	SILTY CLAY (CL), brown, medium stiff, medium plasticity
																P	92		
												++						60	SAND (SP), brown, loose, medium
																-	,,0	65	SILTY SAND (SM), yellow brown, medium
												+-	-			-	100	70	dense, medium to fine
										_		-	-				36	75	CLAYEY SAND (SC), reddish brown, dense fine
		 -																<u> </u>	SILTY SAND (SM), brown, medium dense, medium to fine

VATION: 4674.9'

YPE OF BORING: ROTARY WASH

ATE DRILLED: 4-26-81

INTERMOUNTAIN POWER PROJECT 80-164

LOG OF BORING NO. LB-B-313

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TISTS AEPOATED	N GRAVEL		\$ \$ANO	N FINES	LIQUID LIMIT IN	PLASTICITY INDER (%)	Unicharugo Ser Ma STRENGTH (TSF)	WOISTURE CONTENT	DAY DENSITY		SISTA OWS/F		100 #	BAND BINNAR	A RECOVERY	DEPTH FEET]	LITHOLOGIC DATA
																5-	SAND (SP), brown, loose, coarse to medium
	1		58	41	25	12		21	101					ρ	84	15~	CLAYEY SAND (SC), brown, dense, medium
) :	70	30				19	120					P	40	20-	SILTY SAND (SM), brown, loose, medium to fine
								30	91					P	48	30 -	CLAYEY SAND (SC), reddish brown, medium dense, fine SILTY SAND (SM), brown, medium dense, fine
																35-	SANDY CLAY (CL), grayish yellow, medium stiff, medium plasticity
														P	40	40-	SAND (SP), grayish tan, loose, medium, very little fines (< 5%)
																45-	CLAYEY SAND (SC), brown, dense, fine
V:													-	P	92	50-	SAND CLAY (CL), grayish yellow, medium stiff, medium plasticity
																55-	TINE
		İ														60	T.D. = 52.5'
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										-			$\frac{1}{1}$			75	
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TYPE OF BORING: ROTARY WASH

DATE DRILLED: 4-26-81

INTERMOUNTAIN POWER PROJECT 80-164

LOG OF BORING NO. LB 8-314

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TIETS AFFORTED	* GRAVEL	" GNAS #	* FINES	רוסחום רוחוז וצו	PLASTICITY INDEX (%)	(78F) STRENGTH STRENGTH STRENGTH	MOISTURE CONTENT	DAY DENSITY IF	o 20	RE! (BLC	SIST/	ANCE FOO	•	1000	REPUSAL SAMPLE TYPE	* AECOVERY	DEPTH (# EET)	LITHOLOGIC DATA
																	5-	SAND (SP), brown, loose, medium, fine gravel
										$\downarrow \downarrow$							10-	CLAYEY SILT (ML), brown, medium stiff, low plasticity
	°	68	32				15	109							P	56	15 -	SILTY SAND and CLAYEY SAND (SM & SC), brown to grayish brown, fine, silty to 11.5', clayey 11.5' to 13'
															_		20-	SAND (SP), grayish brown, loose, medium (13' to 21'), fine (21' to 26'), fine gravel (13' to 21')
							18	113							P	32	25 -	
																	30-	SANDY CLAY (CL), brown, stiff, medium plasticity
							35	85							P	60	35-	SAND SILT (ML), brown, medium stiff, low plasticity, silty sand (39' to 40') brown, fine sand
•			!										\perp				8	3. V. S. S. S. S. S. S. S. S. S. S. S. S. S.
											 		-		-	64	45-	SAND and CLAY (SP & CL), reddish brown, loose, fine, innerbedded clay, 1/2" thick with 6" sand
																	•0.	SILTY SAND (SM), reddish brown, loose, fine
															P	84		SAND and CLAY (SP & CL), brown, dense, fine sand, grades into clay, no distinct layering
											$\parallel \parallel$		-		-		55.	T.D. = 52.5'
										+	-		-	H			60	
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ELEVATION: 4663.21"

TYPE OF BORING: ROTARY WASH

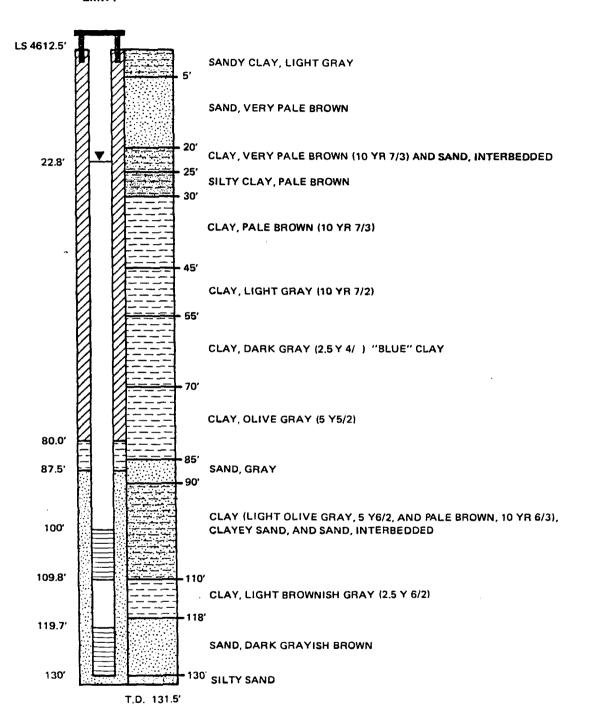
DATE DRILLED: 4-28-81

EFFEC
The Earth Technology Corporation

INTERMOUNTAIN POWER PROJECT

LOG OF BORING NO. LB-8-317







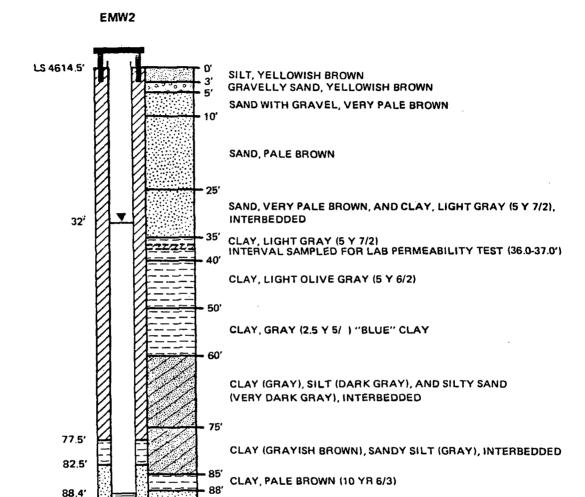
PROJECT NO.:

82-523

INTERMOUNTAIN POWER PROJECT

LITHOLOGY AND WELL DESIGN MONITOR WELL 1

11.82



SAND, BROWN (10 YR 5/3)

- 1⁰⁰ CLAY, PALE BROWN (10 YR 6/3)

98.7

T.D. 101.5'



PROJECT NO .:

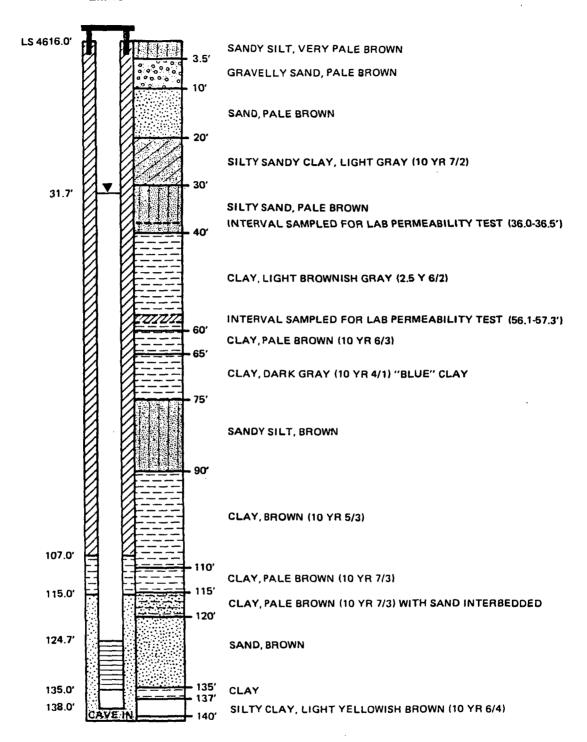
82-523

INTERMOUNTAIN POWER PROJECT

LITHOLOGY AND WELL DESIGN MONITOR WELL 2

11-82







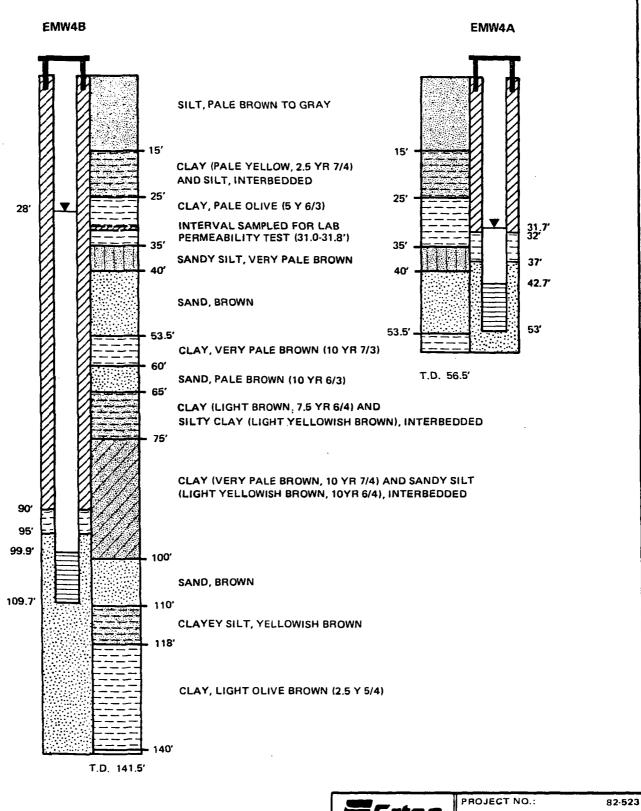
PROJECT NO .:

82.52

INTERMOUNTAIN POWER PROJECT

LITHOLOGY AND WELL DESIGN MONITOR WELL 3

11-82

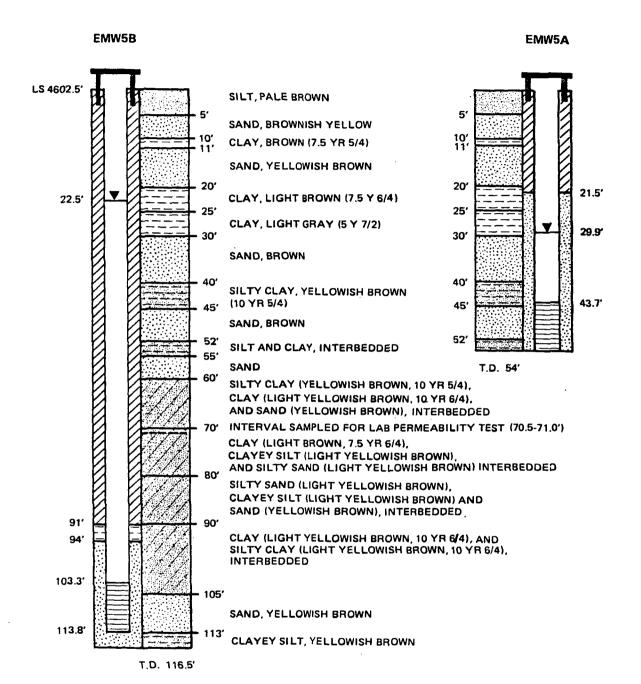


INTERMOUNTAIN POWER PROJECT

LITHOLOGY AND WELL DESIGN MONITOR WELLS 4A AND 4B

11-82

FIGURE D-4





PROJECT NO .:

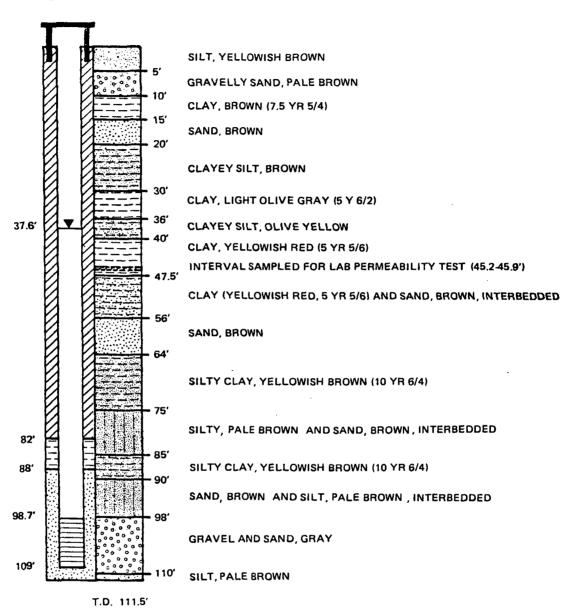
82-523

INTERMOUNTAIN POWER PROJECT

LITHOLOGY AND WELL DESIGN MONITOR WELLS 5A AND 5B

11-82







PROJECT NO.:

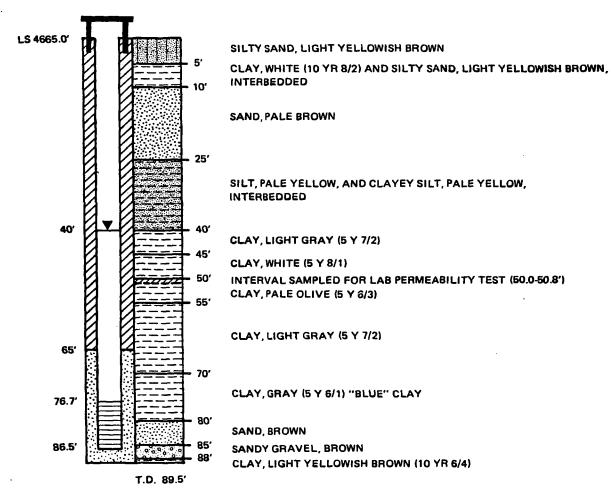
82-52

INTERMOUNTAIN POWER PROJECT

LITHOLOGY AND WELL DESIGN MONITOR WELL 6

11-82

EMW7





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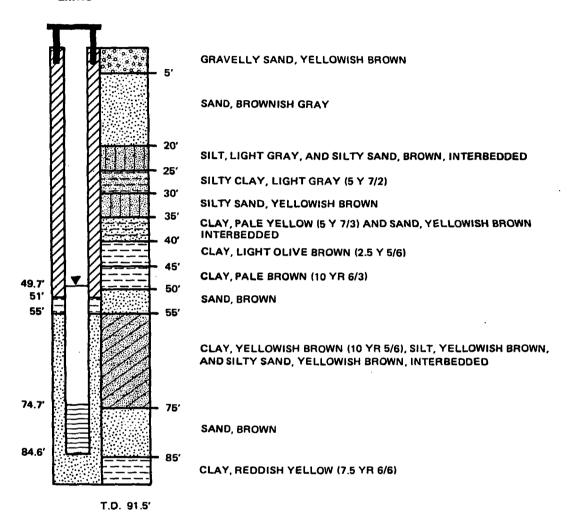
82-523

INTERMOUNTAIN POWER PROJECT

LITHOLOGY AND WELL DESIGN MONITOR WELL 7

11-82

EMW8





PROJECT NO.:

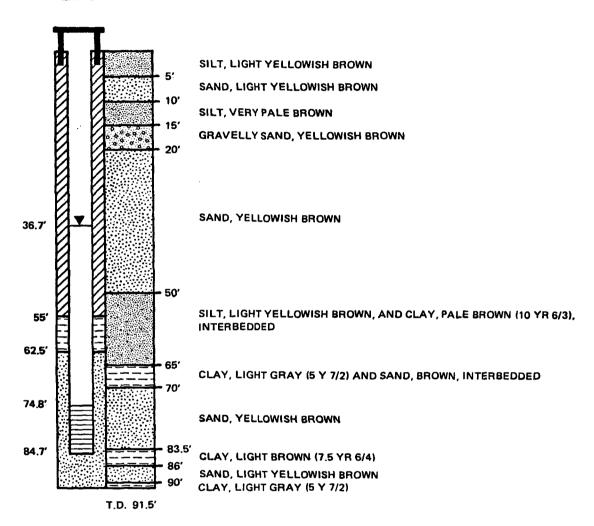
82-523

INTERMOUNTAIN POWER PROJECT

LITHOLOGY AND WELL DESIGN MONITOR WELL 8

11-82

EMW9





PROJECT NO .:

82-523

INTERMOUNTAIN POWER PROJECT

LITHOLOGY AND WELL DESIGN MONITOR WELL 9

11-82

Appendix 2

Patent to Intermountain Generating Facility Land Site



United States Department of the Interior

in reply reper to 27.10 U-45949 (U-942)

BUREAU OF LAND MANAGEMENT UTAH STATE OFFICE 136 E. SOUTH TEMPLE SALT LAKE CITY, UTAH 84111

PATENT No. 43-81-0024

Dated August 31, 1981

IMPORTANT DOCUMENT ATTACHED

Intermountain Power Agency P.O. Box BB Sandy, UT 34070

COUNTY Millard

Gentlemen:

We are pleased to transmit to you the attached patent to land described thereon.

This is the original document conveying the described land from the United States and should be kept in a safe place, as well as be recorded in the county recorder's office for the county in which the lands described are located.

Sincerely yours,

Chief, Branch of Lands and Minerals Operations

Enclosure Patent No. 43-81-0024 Form 1660-8 (July 1975)

.Serial: Utah 45949

The United States of America,

To all to whom these presents shall come, Greeting:

WHEREAS.

Intermountain Power Agency

is entitled to a Land Patent pursuant to Section 203 of the Act of October 21, 1976 (90 Stat. 2750; 43 U.S.C. 1713), for the following described lands:

Salt Lake Meridian, Utah

T. 15 S., R. 6 W., Sec. 18, SWWNWWW, SWW; Sec. 19, NWW, NYSWW, SWWSWW.

T. 15 S., R. 7 W.,
Sec. 10, all;
Sec. 11, all;
Sec. 12, SW4SW4;
Sec. 13, SE4NE4, E4SE4, W4E4, W4;
Sec. 14, all;
Sec. 15, all;
Sec. 22, Lots 1, 2, 4, 6, 9;
Sec. 23, Lots 1, 3, 5, 6, N4N4, SE4NE4;
Sec. 24, Lots 1, 2, 5, 7, N4, N4SE4.

Containing 4,614.78 acres

NOW KNOW YE, that there is, therefore, granted by the UNITED STATES unto the above claimant the land above described; TO HAVE AND TO HOLD the said land with all the rights, privileges, immunities, and appurtenances, of whatsoever nature, thereunto belonging, unto the said claimant, its successors and assigns, forever;

EXCEPTING AND RESERVING TO THE UNITED STATES:

- A right-of-way thereon for ditches and canals constructed by the authority of the United States. Act of August 30, 1890, 26 Stat. 391; 43 U.S.C. 945 (1970);
- All minerals in the land above described, with the right to prospect for, mine and remove the same under applicable law and such regulations as the Secretary may prescribe.

IN TESTIMONY WHEREOF, the undersigned authorized officer of the Bureau of Land Management, in accordance with the provisions of the Act of June 17, 1948 (62 Stat. 476); has, in the name of the United States, caused these letters to be made Patent, and the Seal of the Bureau to be hereunto affixed.

GIVEN under my hand, in SALT LAKE CITY, UTAH
the THIRTY-FIRST day of AUGUST in the year
of our Lord one thousand nine hundred and EIGHTY-ONE
and of the Independence of the United States the two hundred
and SIXTH.

ACTING State Director

Patent Number 43-81-0024

Utah State Office Bureau of Land Management

38

Appendix 3

Cost Estimate for Closure of the Sanitary Landfill Financial Assurance

Cost Estimate for Closure of the Sanitary Landfill

With the recent changes in Industrial Landfill regulations (R315-304), Class IIIb landfills are now required to provide financial assurance for closing costs. Intermountain Power Service Corporation has a Class IIIb industrial landfill located at the Intermountain Generating Station in Delta, Utah. The landfill is located in Township 15 South, Range 7 West, NW 1/4 of Section 13 and covers approximately 47.5 acres.

Closure of a Class IIIb landfill is required to meet specifications of R315-305-5(5)(b). The following items and their estimated cost are listed below as required in the above regulations. (This is the estimate submitted for the 2006 Solid Waste Landfill Annual Report.)

 Having equipment level the waste to extent possible. This would be covering any open trench excavated and still open, and removing any loose refuse in the landfill area to the trench before coverage. The maximum trench exposed at any one time is approximately 300 feet.

> Removing any loose refuse to the trench: 24 hr at 35.82/hr = \$860Covering the trench (8,000 cu. yards): 24 hr at 176.97/hr = \$4,248

 Covering the waste with 2 feet of soil, contouring the cover and preparing the area for seeding. Hauling in up to 21,000 cubic yards of soil to contour and place soil for vegetation.

Scraper hauling 262 yards per hour for 80 hours at \$651.60/hr = \$52,128

Seeding, mulching and (fertilizing as needed) the area with native grass and/or shrubs:

Seeding the whole landfill area (48.8 disturbed acres): \$703.53/acre = \$34,332

Total cost estimate = \$91,568

This landfill accepts only nonhazardous industrial refuse generated on site, no municipal waste, as per R315-303-3(5)(e), thus no gas monitoring is required. Class IIIb landfills do not require any ground water monitoring as per R315-304-5(4)©. There will be no post cost incurred from these items.

The source of information for costs to reclaim both the Sanitary and Combustion By-Products Landfills is based on cost estimated from local contractors in the Delta and Salt Lake City area. These estimates are not actual bids to do the work. The original estimates were gathered from the same sources back in 2000 to prepare the annual solid waste reports to the State of Utah. Each year the amounts were increased by the rate of inflation which has averaged around three to 4 percent. The application has a copy of the estimates for the annual report submitted in February 2006.

To check the numbers for this submittal, contractors were contacted in May and June of 2006 to confirm the costs submitted in the 2006 annual update were inline with reclamation costs today. The costs submitted in the 2006 annual report is IPSC's estimate for closure of the Combustion By-Products Landfill are in line with current costs for reclamation and are the estimated reclamation costs for the Sanitary Landfill. Contractors contacted were:

- Rancho Equipment (Delta, Utah)
- Wheeler Equipment (Salt Lake City, Utah)
- Bureau of Land Management (Fillmore, Utah) for seed cost estimates
- Intermountain Farmers (Delta, Utah) for fertilizer estimates

The contractors above provided the following cost estimates:

•	Cat 631E Scraper, 21 yds struck (31 yds heaped), based on 24 yards \$2,000/day or \$18,000/month, plus \$70/hr fuel (20 gph use), plus \$50/hr operator
•	Cat 970 front end loader with operator\$100/hr
•	Small backhoe
•	Labor Rate to pick up trash \$20/hr
•	Seed Drill
•	Native Seed @ \$30/lb @ 9 lb/acre\$270/acre
•	Fertilizer @ \$260/ton @ 20 lb N/acre
•	Straw mulch @ 30/ton @ 4,000 lb/acre
•	Mulch crimper straight disk \$85/hr or \$10/acre

Sanitary Landfill:

Moving any loose refuse:	24 hours labor @ \$20/hr for 2 laborers 8 hours of backhoe @ \$65/hr	\$960 \$520
Covering trench (8,000 cu y	rds) 24 hours of front end loader @ \$100/hr	\$2,400
from stockpile 2,500 feet to	ds of soil to landfill area. Scraper hauling the southwest. 80 hours, 11 trips/hr for 80 (\$18,000), \$370/hr daily rate (\$29,600)	\$29,600
\$10/acre for disc to crimp n	70/acre for seed, \$10/acre for drill and nulch, \$60/acre for straw mulch, \$20/acre for or to pull the crimper and disc	\$18,500
Total		\$52,000

Sanitary Landfill: Intermountain Power Agency (IPA), the owner of the power plant has established an account with Utah Public Treasurers Investment Fund (PTIF) to cover the costs of closure of the Sanitary Landfill. A copy of the Statement of Account No. 6107 that was submitted with the 2006 Annual Solid Waste Report for 2005 is attached.

STATEMENT OF ACCOUNT



UTAIL PUBLIC TREASURERS' INVESTMENT FUND

Edward T. Alter, Utah State Transurer, Fund Manager B315 State Capitol Complex Salt Lake City, Utah 84114-2315 Lucal Call (801) 538-1042 Toll Free (800) 395-7665

www.treusqror.utah.gov

PAGE: 1

ESCROW-INTERMOUNTAIN POWER AG ATTN: JIM HEWLETT 10653 S RIVER FRONT PKWY SO JORDAN UT 84095

01/31/06

STATEMENT OF ACCOUNT NO: 6107

REPORT PERIOD: 01/01/06 TO 01/31/06

DATE	REFERENCE	DEPOSITS	WITHDRAWALS	BALANCE
				~~~~~~~~~~
01/01/06	REGBAL	0.00	0,00	88,259.30
01/31/06	NETEARN	323.88	0.00	88,583.18
01/31/06	ENDBAL	0.00	. 0,00	88,583.18

#### ACCOUNT SUMMARY

BEGINNING BALANCE:		88,259,30
DEPOSITS IN THE PERIOD:		323.88
WITHDRAWALS IN THE PERIOD:		0.00
ENDING BALANCE:		88,583,18
GROSS EARNINGS:		323.88
ADMINISTRATIVE FEE (0.0000%)		0,00
NET EARNINGS:		323.88
AVERAGE DAILY BALANCE: " "		88,259.30
GROSS EARNINGS RATE:	4.2616%	

NET EARNINGS RATE: 4.2616%

12-31-05 GASB 31 FAIR VALUE PER SHARE FACTOR IS .999564

#### Landfill Post-Closure Care Cost Estimates

#### Sanitary and Combustion By-Products Landfills

Intermountain Power Service Corporation (IPSC) has two landfills at the Generating site located near Delta Utah. With the two landfill sites located less than a mile apart, post-closure costs for the two landfills are figured together. This way travel and mobilization costs are reduced as work can be done on both site in one visit. Costs for each landfill can be split up based in the area of each landfill. Both landfills are Class IIIb landfills. They do not require ground water monitoring and analysis, gas monitoring and collection, or a leachate collection/disposal system or maintenance on these systems.

The post-closure plan consists of annual inspections of the landfills, Maintenance of roads, fences, and surface drainage ditches and touching up small areas with vegetation reseeding. IPSC has observed that letting an area revegatate naturally has provided superior coverage and resilience than remediate seeding. Plants that grow from natural seed once established do better. By the time the landfill is scheduled for closure, a large share of the landfills should be reseeded.

#### Post Closure Costs for Both Landfills:

Annual site inspections and recordkeeping: \$500/inspection/ year X 30 yr =	\$15,000
Spot vegetation reseeding on 1% of the landfill area per year 4 acres/year X \$441*/ acre X 30 yr =	\$52,920
Maintenance of site(fences, ditches, and slopes of landfills) 40 hours/yr X \$75.00/hr X 30 yrs =	\$90,000
Total post closure costs for both landfills	\$157,920

^{*} Reclamation costs minus the scraper time to place soil (pg81). 1 hour / acre backhoe time plus 3.0 cu yards of soil per acre @ 2.00/yd = 370 + 65 + 6 = 441

The costs are divided between each landfill based on area.

Area Combustion By-Products Landfill = 339 acres Area Sanitary Landfill = 52 acres

The financial assurance requirements for the combustion by-products landfill closure costs is already in place. The corporate financial test (R315-309-9) is being used to meet the required financial assurance. The increased costs associated with post-closure costs of the combustion by-products landfill will be covered by the existing corporate financial mechanism.

The financial assurance requirements for the sanitary landfill, an account with the Utah Public Treasurers Investment Fund(PTIF) has been opened by IPA. Once the State agrees with the estimate for post-closure costs, that amount will be added to IPA's PTIF account.

### Appendix 4

### **Quarterly Inspection Forms**

## Quarterly Sanitary Landfill Inspection Check List A check in the shaded boxes indicate abnormal condition

Date of Inspection	Inspection Item	Yes	No	Notes:
	Are the access roads to the Sanitary landfill adequately treated to control fugitive dust from vehicles?			
	The drainage berm/slope on open side of trench in place to prevent storm water from entering the landfill cell			
	The material in the landfill cell presents a blowing trash problem.			
	The surrounding area of the landfill has excessive blowing trash.			
	The boundary fence is in good condition			
	All the landfill signs present at the required locations.			
	The asbestos trenches are covered.			
	There is an Insect/rodent problem.			
	Site drainage ditches are clear of debris.			

Inspector's Name & Signature		
	Print	Signature
Date of Inspection		
Additional Notes:		

### Appendix 5

Daily Operating Record for the IPSC Sanitary Landfill

		J4			2006			tir	cor		: State	ry and c	lfi <b>ffee</b>			vs 1/28/2	.003
dumpster#		Mon 7/31	Tue 8/01	Wed 8/02	Thu 8/03	Fri 8/04	Sat 8/05	Sun 8/06	dumpster#		Mon 7/31	Tue 8/01	Wed 8/02	Thu 8/03	Fri 8/04	Sat 8/05	Sun 8/0
1	Gross								13	Gross							
	Tare	27590	27590	27590	27590	27590	27590	27590		Tare	30700	30700	30700	30700	30700	30700	3070
	Net									Net							
2	Gross								14	Gross							
	Tare	28180	28180	28180	28180	28180	28180	28180		Tare	27580	27580	27580	27580	27580	27580	2758
	Net									Net							
3	Gross								15	Gross							
	Tare	28440	28440	28440	28440	28440	28440	28440		Tare	27280	27280	27280	27280	27280	27280	2728
	Net									Net	4 4						
4	Gross								16	Gross		3 5					
	Таге	27500	27500	27500	27500	27500	27500	27500		Tare	28080	28080	28080	28080	28080	28080	2808
	Net									Net							
5	Gross								17	Gross							
	Tare	27920	27920	27920	27920	27920	27920	27920		Tare	30360	30360	·· 30360	30360	30360	30360	3036
	Net									Net							0000
6	Gross								18	Gross							
	Tare	30280	30280	30280	30280	30280	30280	30280		Tare	27340	27340	27340	27340	27340	27340	2734
	Net									Net						27040	2734
7	Gross								19	Gross	·						
	Tare	28900	28900	28900	28900	28900	28900	28900		Tare	30640	30640	30640	30640	30640	30640	3064
	Net									Net			1		300 10	- 000-10	3004
8	Gross								20	Gross							
	Tare	30440	30440	30440	30440	30440	30440	30440		Tare	28300	28300	28300	28300	28300	28300	2820
	Net									Net				20000	200001	20300	28300
9	Gross								21	Gross							
	Tare	27680	27680	27680	27680	27680	27680	27680		Tare	30540	30540	30540	30540	30540	30540	0000
	Net									Net			- 555,5	00070	30340	30340	30540
10	Gross								22	Gross							
	Tare	27400	27400	27400	27400	27400	27400	27400		Tare	28440	28440	28440	28440	28440	20440	
	Net									Net		20110	20.70	20-1-10	20440	28440	28440
	Gross									Gross	-						
	Tare	28300	28300	28300	28300	28300	28300	28300		Tare	28900	28900	28900	28900	28900	20000	000=
	Net		1							Net				20300	20900	28900	28900
	Gross									Gross	<del>  </del>	<del></del>					
	Tare	27160	27160	27160	27160	27160	27160	27160		Tare					<del></del>	<del></del>	
	Net									Net	<del></del> +		<del></del>	<del></del>			
aulers									laulers	+					<del></del>		
nitals		1	1	j	1	1	1	į.	nitals	- 1	- 1	İ	l	]	ł	1	

This form to be dated and signed at the end of each operating day with the number of loads and the weight recorded. The section on the back shall be completed with date and signature each day the landfill is covered. Completed form forwarded to the environmental group.

landfillcalc 2002xls

Cover Material at the IPSC Sanitary Landfill							
Cover Date				i			
Cover amount					\$		
Cover area					94		
Signature					e _{ve}	,	

This form to be completed everytime cover is placed on the landfill, with date, fill amount, and fill area recorded.

TL=Terry Lane

KM= Kevin Murdock

DB=Dale Bond

KH=Kim Hunnington

SA=Steve Anzaris

LD=Leo Davis

RT=Robert Terry

LS=Les Harwood

VS=Van Stewart

### Appendix 6

**Training for Operators of the Sanitary Landfill** 

### REQUIRED PERIODIC RE-TRAINING BY JOB CLASSIFICATION

### Department: **OPERATIONS**

Job Classification: OPERATING SUPERVISOR #69

Course #	Core Training	Retraining Period (Yrs.)
1005	Driver's License (Site)	3
1035	<b>Emergency Procedures</b>	1
1050	Environmental Policy PAI #191	2
1010A	Fire Extinguisher (Basic)	2
1010A.1	Fire Extinguisher Practical	2
1020	Hazard Communications	1
	Specific Craft Training to be Tracked	
1045	Audiometric Test (Hearing)	1
2434	Chlorine Systems	3
2799.22	Chlorine Systems Refresher	1
1020C	Confined Space Entry	1
1001	CPR	2
1001.P	CPR Practical	2
1009M	Fire Command - 8 Hr. Refresher Course	1
1003	First Aid	<b>3</b> .
1038	Hearing Conservation Class 1 YR.	1
1002E	Pulmonary Function Test	1
1002D	Respirator Certification	1
1002D.1	Respirator Practical	1
2436	<b>Operation of Air Emission Producing</b>	1
1219	Sexual Harassment	1

### REQUIRED PERIODIC RE-TRAINING BY JOB CLASSIFICATION

Department: **OPERATIONS** 

Job Classification: FUEL EQUIPMENT OPERATOR I #49

Course #	Core Training	Retraining <u>Period (Yrs.)</u>
1005	Driver's License (Site)	3
1035	Emergency Procedures	1
1050	Environmental Policy PAI #191	2
1010A	Fire Extinguisher (Basic)	2
1010A.1	Fire Extinguisher Practical	2
1020	Hazard Communications	1
	Specific Craft Training to be Tracked	
1045	Audiometric Test (Hearing)	1
■ 1020C	Confined Space Entry	1
1001	CPR	2
1001.P	CPR Practical	2
<b>1003</b>	First Aid	3
1038	Hearing Conservation Class - 1 Yr.	1
2436	<b>Operation of Air Emission Producing</b>	1
1002E	Pulmonary Function Test	1
1002D	Respirator Certification	1
1002D.1	Respirator Practical	1